

polishing regions may be disposed on a circular polishing pad as concentric annular regions. In a further example, the polishing regions may be disposed as parallel linear regions on a linear pad (e.g., a belt). By arranging these regions of distinct polishing characteristics such that a wafer may be selectively polished by only one region when it is selectively placed in contact with that portion of a polishing pad, enables methods wherein the amount of time of polishing with those regions of distinct polishing characteristics may be controlled to achieve a desired polishing result. In other words, the structure of the polishing pads in accordance with the present invention permits a wafer to remain in contact with a region having a single, distinct, polishing characteristic even though the pad is in motion and travels through one or more complete rotations in the case of a circular pad, or through one or more complete loops in the case of a linear pad.

Polishing pads, configured in accordance with the present invention, may have a uniform top layer with distinct underlying regions which impart the different, distinct polishing characteristics to the polishing regions. Alternatively, such polishing pads may have a uniform underlayer with a top layer having distinct regions of hardness, surface texture, or any other attribute that affects polishing characteristics.

Claims 22-35 are drawn to Applicants' invention of polishing pads suitable for chemical-mechanical polishing of wafers where those pads have two or more regions, each of those regions has a different polishing characteristic, and where the wafer may be selectively placed in frictional contact with any particular region of the polishing pad for a predetermined continuous amount of time regardless of the motion of the pad. In other words, a wafer to be polished can be placed on a region of the polishing pad having a certain polishing characteristic, and, regardless of whether the pad moves radially (e.g., as with a circular pad) or linearly (e.g., as with a belt), the wafer can remain in the region having the selected polishing characteristic until it (i.e., the wafer) is moved, typically under control of the polishing machine, to another region having a different polishing characteristic.

The Rejections under 35 U.S.C. §102(b)

Claims 22 and 26 – 28 still stand rejected under 35 U.S.C. §102(b) as being anticipated by *Glover* (US Patent 959,054).

To reiterate, *Glover* does not disclose the claimed limitation of each polishing region having distinct polishing characteristics [emphasis added]. In fact, *Glover* states at col. 1, lines 13-16, that an object of the invention is to provide a prepared disk in which the abrasive material is applied to one side face and is graded [emphasis added] from the center outwardly; and further states at col. 2, lines 60-65 that the grinding and polishing means comprises abrasive material applied to one surface of a disk, with the abrasive being of different degrees of fineness varying gradually and uniformly from the center to the outer edge of the disk in all directions [emphasis added]. In other words, *Glover* does not disclose the regions of distinct polishing characteristics recited in Applicants' claims. Therefore, those claims cannot be anticipated by *Glover*.

Furthermore, in the rejection, as stated in paragraph 3 of the 25-SEP-2002 Office Action, “*that a recitation of the intended use of the claimed invention ('suitable for chemical mechanical polishing of wafers') must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim...*” The cited art could not have possibly foreseen and anticipate the technology employed by Applicants' invention, namely chemical mechanical polishing (CMP) of integrated circuits on wafer substrates. *Glover*, in 1910 would be applicable to disk grinder polishing of items on a macroscopic level. Whereas, Applicant's claimed invention is for the polishing of wafers on a microscopic level. The polishing entails the smoothing out of features whose dimensions are on the order of microns and below. *Glover's* grinding and polishing disk would not be capable of performing the intended use of CMP.

Per MPEP §2131:

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.” *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as contained in the . . .claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim.

In the §102(b) rejections of claims 22, and 26 – 28 are improper, Applicants respectfully request their withdrawal.

Accordingly, claims 22, and 26 - 28 are allowable.

The Rejections under 35 U.S.C. §103(a)

Claims 29, 30, 34, and 35 still stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Glover*.

Applicant respectfully reasserts that *Glover* does not disclose or suggest Applicant's claimed invention as discussed earlier, as it relates to CMP. *Glover* does not disclose the regions of distinct polishing characteristics recited in Applicant's claims. Therefore, those claims cannot be obvious in view of *Glover*. Per MPEP 2143.01 provides:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

In the §103(a) rejections of claims 29, 30, 34, and 35 are improper, Applicants respectfully request their withdrawal.

Accordingly, claims 29, 30, 34, and 35 are allowable.

Claims still stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Glover* in view of *Cote et al.* (U.S. Patent No. 5,534,106).

To reiterate, *Cote et al.*, discloses chemical mechanical polishing of wafers using a polishing pad that has two or more regions of different polishing characteristics. The regions of the pads shown and described by *Cote et al.*, are arranged as wedges, or alternatively as half circles, such that a wafer is exposed to each of the regions during each rotation of the pad. See, for example, column 6, lines 54-59, where it is stated: "Since both pad 202 and wafer are rotating, the wafer undergoes alternating abrasion and polishing. This cycle is continuously repeated with each rotation of pad 202, to provide continuous application of alternating abrasion and polishing to the wafer." The invention

defined by Applicants' Claims require that the regions of different polishing characteristics be disposed either as concentric annular regions for circular pads, or as parallel linear regions for polishing pads that are configured as linear belts. This is in contradistinction to *Cote et al.*, which teaches pad configurations designed to continuously expose the wafer to the different polishing regions with each rotation of the polishing pad (which is equivalent to each loop of a linear or belt-style pad). *Cote et al.*, teaches away from Applicants' invention.

Since the combination of *Glover* with *Cote et al.*, does not produce the Claimed invention, the rejections under 35 USC 103(a) should be withdrawn. Such withdrawal is consistent with MPEP 2143.01.

Accordingly, claims 23-25 and 31-32 are allowable.

In that the claims 22 - 35, are allowable, Applicant respectfully requests that a patent issue.

Please charge any fees other than the issue fee and credit any overpayments to Deposit Account 14-1270.

Respectfully submitted,

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